

DOCTORAL THESIS SUMMARY

Adherence to Therapy in the Chronic Hypertensive Patient in Primary Care

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Introduction and motivation. Arterial hypertension (HTN) is one of the leading causes of cardiovascular morbidity and mortality globally, with an estimated presence of over 1.28 billion adults. In Romania, data from the SEPHAR III study show a prevalence of 45.1% of hypertension in the adult population, with only 30.8% of patients reaching the recommended blood pressure targets — one of the lowest control rates in Europe. Poor adherence to antihypertensive treatment is identified as the main modifiable cause of this gap, with the World Health Organization estimating that increasing the effectiveness of adherence interventions would have a greater impact on the health of the population than any improvement of specific treatments. The absence of a validated tool in Romanian for assessing adherence, combined with the insufficiency of national studies dedicated to primary care, was the direct motivation of the present doctoral research.

Theoretical framework. The thesis adopts as its main conceptual reference the ABC Taxonomy (Ascertaining Barriers to Compliance), developed under the aegis of the European Council, which defines medication adherence through three sequential components: initiation, implementation and discontinuation of treatment. The theoretical framework of personal contribution is the IMB (Information-Motivation-Behavioral Skills) model, chosen for its cross-cultural validation in cardiovascular diseases, and for its compatibility with the family medicine paradigm. The IMB model postulates that adherence is determined jointly by: (1) fundamental information about the disease and treatment; (2) personal motivation and perceived social support; and (3) the concrete behavioral skills necessary to comply with the therapeutic regimen. Systematically analyzed adherence measurement instruments include the BARS, MMAS-8, SEAMS, MARS, ACDS, TAQPH and Hill-Bone — the latter chosen as the main instrument of the study due to its three-dimensional structure (medication administration, sodium intake reduction, scheduled follow-up appointments) and specific application in hypertension (HTN).

Research objectives. The thesis has four main objectives: (1) cross-cultural validation of the Hill-Bone Antihypertensive Therapy Compliance Scale (HBCTS) in clinical populations in Romania; (2) characterization of objective and subjective predictors of adherence in hypertensive patients in family medicine in Mureş County; (3) systematic comparative analysis of therapeutic adherence and persistence between the cardiology outpatient clinic and family medicine; and (4) evaluating the feasibility and preliminary clinical impact of a structured hypertension management protocol in real-world primary care practice.

Material and method. The personal contribution is organized in four original studies with progressive methodological design. Study 1 (n=144, outpatient cardiology, pilot cross-sectional design) validated HBCTS psychometrically by exploratory factor analysis, McDonald ω coefficient and ROC analysis, with mean blood pressure (MAP) as an indicator of blood pressure control. Study 2 (n=399, family medicine, Mureş County, Romania, March–August 2024) assessed adherence by HBCTS-R0, persistence by Proportion of Days Covered (PDC) extracted from the Single Integrated Information System (SIUI) and predictors by multivariate logistic regression. Study 3 was a systematic comparative analysis (n=543) between the two clinical populations. Study 4 (n=500

enrolled, n=449 complete the study, duration 12 months) evaluated the feasibility and preliminary clinical impact of the structured protocol in real-world practice, with blood pressure control as the primary endpoint and major adverse cardiovascular events (MACE) as the safety endpoint. All studies mentioned the IOSUD-UMFST affiliation and obtained the appropriate ethical approval.

Main results. Study 1: HBCTS demonstrated acceptable reliability ($\omega=0.75$), good diagnostic discriminability (AUC=0.81), optimal threshold of 50–51 points (sensitivity 83%, specificity 57%) and convergent agreement with blood pressure values. In the cardiology outpatient clinic, 70.55% of patients reported adherence (HBCTS ≥ 50) and 52.08% had adequate blood pressure control (MAP <100 mmHg); each additional scale point was associated with a 35% increase in the chances of blood pressure control for each additional point on the scale (OR=1.35). Study 2: In family medicine, 45.9% of patients had adequate blood pressure control (MAP <100 mmHg). Male gender and younger age were identified as significant independent predictors of low adherence (male: OR=0.467; 95% CI: 0.291–0.748; $p=0.002$; age: OR=1.036/year; 95% CI: 1.014–1.059; $p=0.001$). Treatment coverage days (PDC from SIUI data) demonstrated the strongest correlation with blood pressure control ($r=-0.50$, $p<0.001$), representing the most important objective predictor of BP control. Study 3: blood pressure control (MAP <100 mmHg) was more frequent in the cardiology outpatient clinic than in family medicine (52.08% vs. 45.86%; $\chi^2=4.18$; $p<0.05$). In the family medicine cohort, therapeutic persistence (PDC $\geq 80\%$) was significantly associated with blood pressure control (OR=2.83; 95% CI: 1.92–4.17; $p<0.001$), with family medicine having an advantage in accessing objective systematic follow-up data through SIUI. Study 4: The structured protocol achieved blood pressure control in 32.7% of patients (95% CI: 28.4–37.3%), with a mean reduction of $-20.5/-10.3$ mmHg from baseline. Patients with Stage 1 hypertension at baseline achieved control rates of 77.0%, compared to 15.5% for Stage 2. Stage 2 hypertension at baseline was the only significant independent predictor of treatment failure (adjusted OR=0.05; 95% CI: 0.03–0.09; $p<0.001$). The MACE rate was 2.9%, confirming the safety profile of the protocol.

Originality and scientific contribution. The thesis brings four documented original contributions: (1) the first Romanian validation of HBCTS in two distinct clinical populations (cardiology and family medicine), with validated dual thresholds; (2) the first use of SIUI data as an objective source for measuring therapeutic persistence in Romanian family medicine; (3) the first systematic comparative analysis of adherence between the cardiology outpatient clinic and family medicine in Romania (n=543); and (4) the first pragmatic evaluation, in real-world family medicine conditions, of a structured protocol for uncontrolled hypertension in Romania. The results were published in Web of Science indexed journals (Patient Preference and Adherence, IF=2.0; Medical Sciences-MDPI, IF=4.4; Cureus Journal of Medical Science).

Conclusions. The thesis demonstrates that HBCTS is a valid and reliable tool for assessing adherence in Romanian clinical contexts. Administrative persistence indicators extracted from SIUI (PDC) showed a stronger association with blood pressure control than the self-reported HBCTS score, supporting the complementary value of objective data. The documented difference in blood pressure control between cardiology and family medicine supports the need for systematic follow-up protocols in primary care. The blood pressure control rate of 32.7% achieved through the protocol falls in the upper range of rates reported in the literature for populations with previously uncontrolled hypertension, with baseline disease severity identified as the main factor limiting outcomes. The results constitute data-driven arguments for strengthening the role of family medicine in the long-term management of hypertension in Romania and for integrating adherence assessment as a routine procedure into primary practice.